Hurricane Washes Away Drought

The remnants of a nasty hurricane caused serious flooding in the Delaware River Basin in the late summer of 1999, breaking the back of an unprecedented drought that destroyed thousands of acres of farm crops and dried up streams.

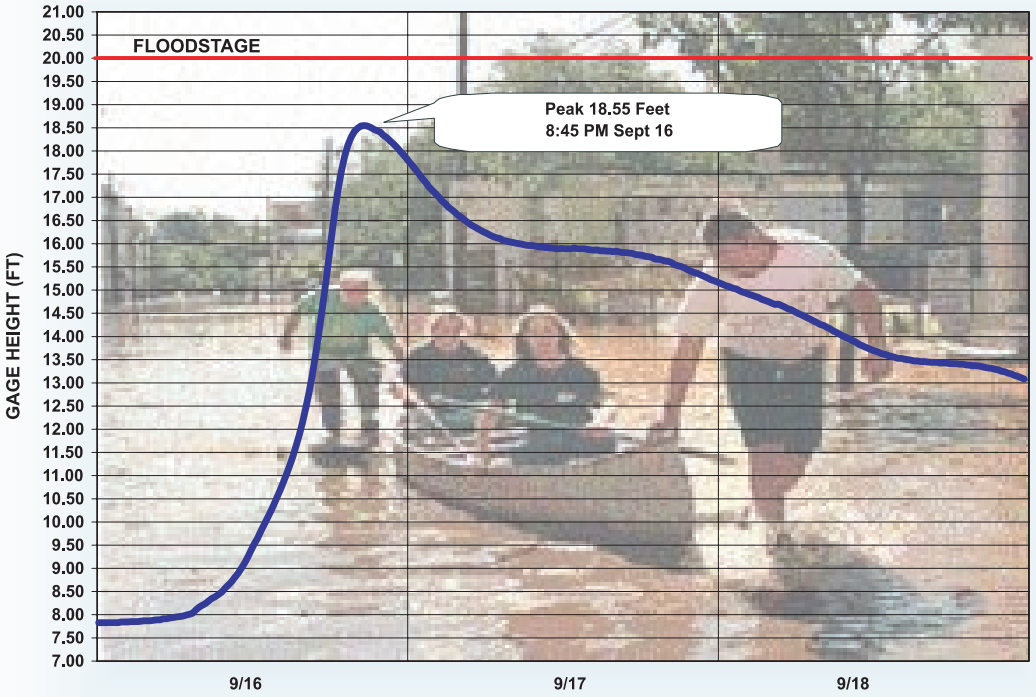
Tropical Storm Floyd brushed the New Jersey coast on September 16, unleashing up to 10 inches of rain in portions of the basin. Extensive flood damage occurred along tributary streams of the lower Delaware River, which rose eleven feet in about eight hours at Trenton, N.J.

Despite the sharply contrasting weather patterns, the year ended up pretty normal from a hydrologic standpoint.

In New Jersey, for instance, precipitation totaling 48.92 inches fell in 1999, 3.06 inches above the normal amount. For many that was startling, considering the devastating damage from the drought.

Andrew Straug, 4, plays among the rocks exposed by record low water levels in the Brandywine Creek as it flows through Wilmington, Del. on July 15, 1999. The Brandywine is the city's main drinking water source. ***(The News Journal/Robert Craig)***

DELAWARE RIVER AT TRENTON, NEW JERSEY: EFFECTS OF HURRICANE FLOYD ON GAGE HEIGHT SEPTEMBER 16-18, 1999



"That makes it (1999) the 23rd wettest of the century, interesting because April through July was the second driest of the century," noted David Robinson, state climatologist at Rutgers University.

"It was a year of feast or famine when it came to rain, drought or deluge," he said. "The deluge was January when we had several rains and, of course, Tropical Storm Floyd. It was one of those cases when if you wait around long enough it will average out."

On August 18, 1999, the commission took emergency action to deal with the drought, including a decision to marshal water supplies in federal, state, and power company reservoirs in order to bolster streamflows by coordinating releases from the impoundments.

The DRBC commissioners also agreed to require large self-supplied water users to prepare and submit to the commission contingency plans for water curtailment had that become necessary.

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— Carol Collier, DRBC's executive director

Emergency Actions Warranted

The commission noted that while drought warning and emergency indicators based on reservoir storage levels that are set forth in its own operating plans had not yet been triggered, emergency actions were warranted due to the severity of the water shortage.

"The reservoirs benefitted from the winter and spring runoff and are masking the true nature of this drought," noted Carol R. Collier, the DRBC's executive director.

Deeming it in the public interest, the commission went on record as officially supporting the drought management actions already taken by the four basin states — Delaware, New Jersey, New York, and Pennsylvania.

"We want to send a clear message to our constituents that management plans are in place throughout the Delaware River Basin to deal with different aspects of the drought," noted Ms. Collier. "The DRBC's drought operating plans focus on streamflow management and controlling salinity intrusion in the Delaware River. The states' plans look at other factors like soil moisture, ground water levels, crop damage, even the potential for forest fires. Municipalities and townships have their own plans to deal with unique local conditions."

In other action, the commissioners at the August 18 meeting:

- ratified an earlier July 21 decision to reduce the Trenton flow objective from 3,000 cubic feet per second (cfs) to 2,700 cfs to preserve storage in two lower basin reservoirs — Blue Marsh on the Schuylkill River and Beltzville on the Lehigh River.
- agreed to continue an arrangement with the U.S. Army Corps of Engineers to store water at the Corps' F.E. Walter Reservoir to provide releases for flow augmentation. The reservoir, located on the Lehigh River near Wilkes-Barre, Pa., normally is used just for flood control, meaning the pool level is held to a low elevation so the dam can capture runoff from storms.

Less than two months later, the commission lifted the emergency measures after Floyd, and an earlier tropical storm (Dennis) soaked the Northeast.

In the last two weeks of September storage in the three huge upper basin water supply reservoirs (Pepacton, Neversink, and Cannonsville) rose by 23 billion gallons. Streamflows also rebounded and ground water levels, some at record lows during the summer, were showing signs of recovery.

The heavy rains also flushed the "salt front" in the Delaware River downstream to just north of the Delaware Memorial Bridge, about eight miles below its normal location for that time of year. If the salty water migrates too far upstream it can threaten water supplies, cause corrosion problems for industries which use Delaware River water, and increase costs for water treatment.

Despite lifting the restrictions on September 30, commission officials urged the basin's citizens to continue to conserve, noting that water conservation should be a lifelong habit.

Go With the Flow

During the summer of 1999, blue crabs, the ones you dust with Old Bay and quaff down with beer, visited Dover, Del., swimming within site of the state capitol building.

The salty water in the upper St. Jones River suited them just fine.

Record low stream flows caused by the drought resulted in salinity intrusion in many of the basin's waterways. The salty water simply crept upstream because there wasn't enough fresh water flowing downstream to hold it back.

The crabs, which normally inhabit the salty and brackish water near or in the Delaware Bay, followed the "salt front" as it migrated inland.

Salinity intrusion also occurred on Delaware's Christina River. In early August there was an elevated concentration of chlorides that exceeded 600 milligrams per liter – almost three times higher than the drinking water standard set by the U.S. Environmental Protection Agency.

This prompted the commission to waive stream flow pass-by requirements on White Clay Creek, a Christina tributary, so that water utilities could capture as much fresh water flow as possible. That action, combined with releases from an upstream reservoir, helped stabilize the situation.

Kids Quiz

A new feature on the DRBC's web site is a section about floods geared for children. The site has a quiz about flooding as well as links to PBS programs like NOVA and to the Franklin Institute Science Museum.

Youngsters can learn how weather is forecast and read about exciting rescues of people and animals. They also can click on real life flood survival stories from flood survivors from around the world.

In addition to the children's site, these topics are covered:

- the reasons floods occur
- what people can do to protect themselves and their families
- flood lose reduction (including information about flood insurance)
- flood warnings, forecasts (via links to other web sites)

Flood Preparedness: Room for Improvement

The DRBC hosted and participated in a meeting on December 2, 1999 at its West Trenton offices to seek input from experts on the existing level of flood preparedness in the basin and explore areas for improvement. It was attended by representatives from 11 different organizations with flood preparedness responsibilities.

The meeting originally had been set for September 16, the day the nasty remnants of Hurricane Floyd caused serious flooding in the basin. It's as if the storm had arrived on cue.

The overall goal of flood preparedness is to reduce the loss of life and property damage caused by flooding. There are many activities, in addition to flood warning and response, which support this goal. These activities — such as flood plain regulations, property buyouts, storm water management, flood-proofing, structural flood control, and flood insurance administration — are particularly important to prevent new flood damage in developing areas and encourage wise flood plain use.

Even with the success of such programs, existing flood plain development and the potential for damage require an effective flood forecasting, warning, and response system.

In addition to DRBC staff, the meeting was attended by personnel from the National Weather Service, the U.S. Army Corps of Engineers, the U.S. Geological Survey, the New York City Department of Environmental Protection, the New Jersey Office of Emergency Management, the New Jersey Department of Environmental Protection, the New York State Department of Environmental Conservation, the Susquehanna River Basin Commission, the National Park Service, the Upper Delaware Council, and the Delaware River Joint Toll Bridge Commission.

The attendees identified 12 items for improvement in flood preparedness in the Delaware River Basin. Included were increasing public awareness of flooding potential and improving coordination among various agencies in an effort to increase funding levels. Participants also were asked to designate representatives for a Flood Advisory Committee.

One of the top priorities of the committee will be to secure funding for data collection, forecasting, and mapping components of an improved flood response system.